

## **REMARKS**

Reexamination and reconsideration of the rejections are hereby requested.

We note that the drawings are informal and formal drawings will be provided when this application is allowed. Claims 29 and 58 have been objected to. Reconsideration is requested. It is applicants' understanding that the language "according to any one of claims 14-28" as set forth in claim 29 is reciting claims 14 to 28 in the alternative which meets the requirements of 37 C.F.R. 1.75(c).

Claims 30, 35, 39 and 43 have been amended to substitute the term "instructions" for the term "process steps" that the examiner objected to.

Claim 60 stands rejected under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph as being indefinite. Reconsideration is requested. It is submitted that the term  $t$  is defined as the time interval at which  $V_i$  are input. Claims 1-8, 10-37, 39-58 and 61 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,859,742 to Takaishi. Claims 9, 38 and 59-60 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takaishi in view of U.S. Patent No. 6,115,203 to Ho, et al. Reconsideration of these rejections is requested for the following reasons.

The present invention is directed to technology allowing the use of a position-velocity (PV) table and either a shaped velocity command or trajectory to control movement of a dynamic system such as a data storage device to reduce mechanical and/or acoustic unwanted vibrations. Although some disk drives rely on PV tables to

determine their inputs, the inputs can result in unwanted vibrations to the systems. The techniques presented and claimed in the invention to reduce and/ or limit such vibrations are not known in the prior art. In particular, independent claim 1 is directed to a control method including shaping a velocity command determined using a PV table. Independent claim 6 is directed to a control method including generating and storing a trajectory, and defining a system velocity in terms of system position and one or more additional variables, in a PV table having  $N > 2$  dimensions. Independent claim 10 is directed to a control method including generating and storing a plurality of such trajectories. Independent claim 14 is directed to a control method wherein the trajectory-generating step generates the trajectory in accordance with a technique for reducing unwanted dynamic system vibrations. Independent claim 59 is directed to a method for generating a PV table by storing a trajectory generated by integrating a partial fraction expansion equation model of the dynamic system. Independent claims 30, 35, 39 and 43 are directed to apparatus embodying the novel methods set forth in claims 1, 6, 10 and 14 respectively.

With respect to claim 30 the Examiner asserts that Takaishi meets each and every limitation. Applicant respectfully disagrees. At least the limitation “shaping the velocity command in order to generate a shaped velocity command” is missing from the reference as is the limitation “controlling the system based on the shaped velocity command.” Takaishi uses feed forward current from a feed forward current setting module, a target location trajectory from a position control module, and a correction value from a correction value setting module. There is no teaching whatsoever of shaping the velocity

command as set forth in this claim. Reconsideration is requested. Claims 31-34 ultimately depend from claim 30 and are therefore allowable.

As to claims 1-5, these method claims include the limitations of shaping the velocity command and controlling the system based on the shaped velocity command. As stated above the concept of shaping the velocity command is missing in the reference.

The Examiner has rejected claim 35 asserting that Takaishi teaches each and every limitation in the claim. It is submitted that the limitation “to generate a trajectory for the system, the trajectory defining system velocity in terms of system position and one or more additional variables” is not disclosed in Takaishi. The examiner has referred to column 28 lines 41-50 but applicant can find no disclosure related to this claim limitation.

As to claim 39 it is pointed out that this claim includes the limitation “to control the dynamic system in accordance with both the detected value of the system variable and the trajectory stored in the position-velocity table.” The undersigned does not see this limitation in Takaishi at column 32 lines 16-22 as cited by the Examiner. Claims 40-42 depend from claim 39 and are also therefore allowable.

Claim 43 includes the limitation that “the processor generates the trajectory in accordance with a technique for reducing unwanted vibrations in the system.” Such a teaching is missing in Takaishi. The Examiner refers to column 2, lines 21-30 of

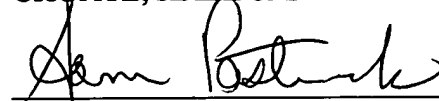
Takaishi. This section teaches that if vibration is generated then a long settling time is required before the vibration ceases. Thus Takaishi directly teaches away from providing a technique for reducing unwanted vibrations in the system as claimed. Claims 44-58 depend from claim 43 and are therefore allowable.

Claims 9, 38 and 59-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takaishi in view of Ho, *et al*, U.S. Patent No. 6,115,203. The Examiner relies on Ho for teaching a partial fraction expansion for unwanted vibrations. The undersigned has reviewed this patent and can find no such teaching in Ho. I note that claims 9 and 38 are dependent claims and depend from allowable claims as discussed above and are therefore allowable. It is submitted that neither Takaishi or Ho in combination teach the partial fraction expansion limitation. Reconsideration is requested.

For the foregoing reasons, it is submitted that claims 1-61 are now in condition for allowance and early favorable action is requested.

Please credit any overpayment and/or charge any additional filing fees required under 37 CFR §§ 1.16 and 1.17 to our Deposit Account Number 03-1721.

Respectfully submitted,  
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Date: May 5, 2005